

BeAGLE

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Serious Mistakes to Avoid!!

- Don't want to use a wrong model (DPMJET/BeAGLE) to drive EIC Detector/IR decisions!
- Don't want to let sloppy E665 data derail valid conclusions from BeAGLE if DPMJET & VENUS are correct.
- The situation is a bit alarming and we need clarity ASAP (As Soon As Possible).

Cleanest measure of "forward" protons

Z. Phys. C 61, 179-198 (1994)

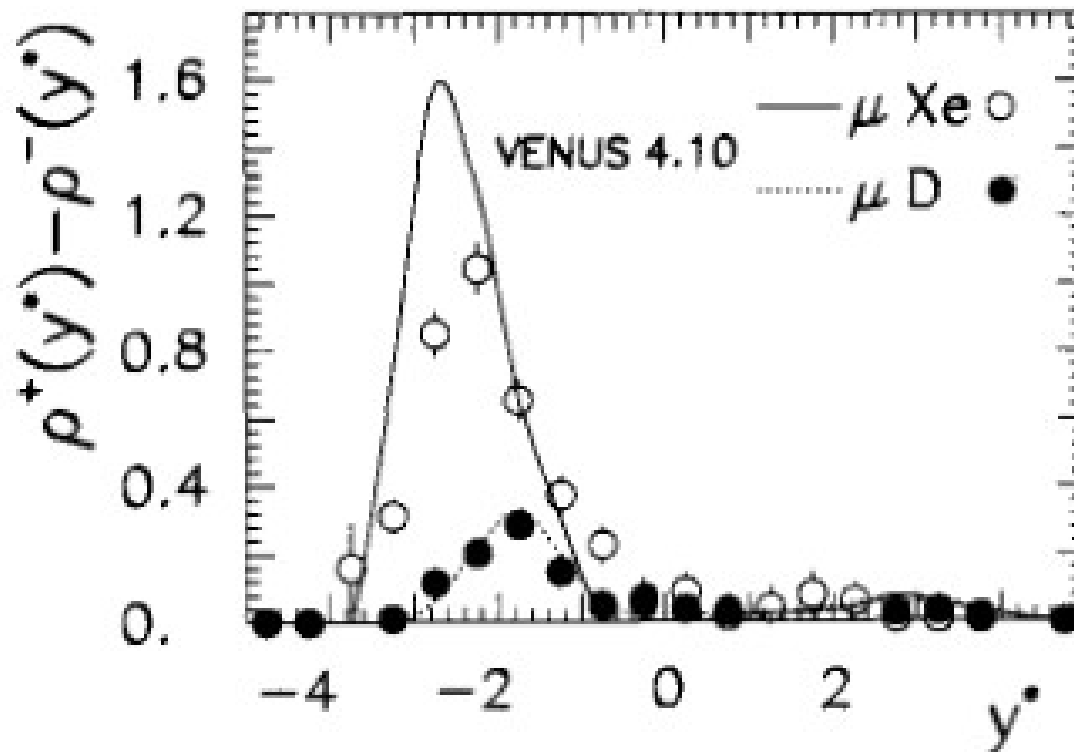
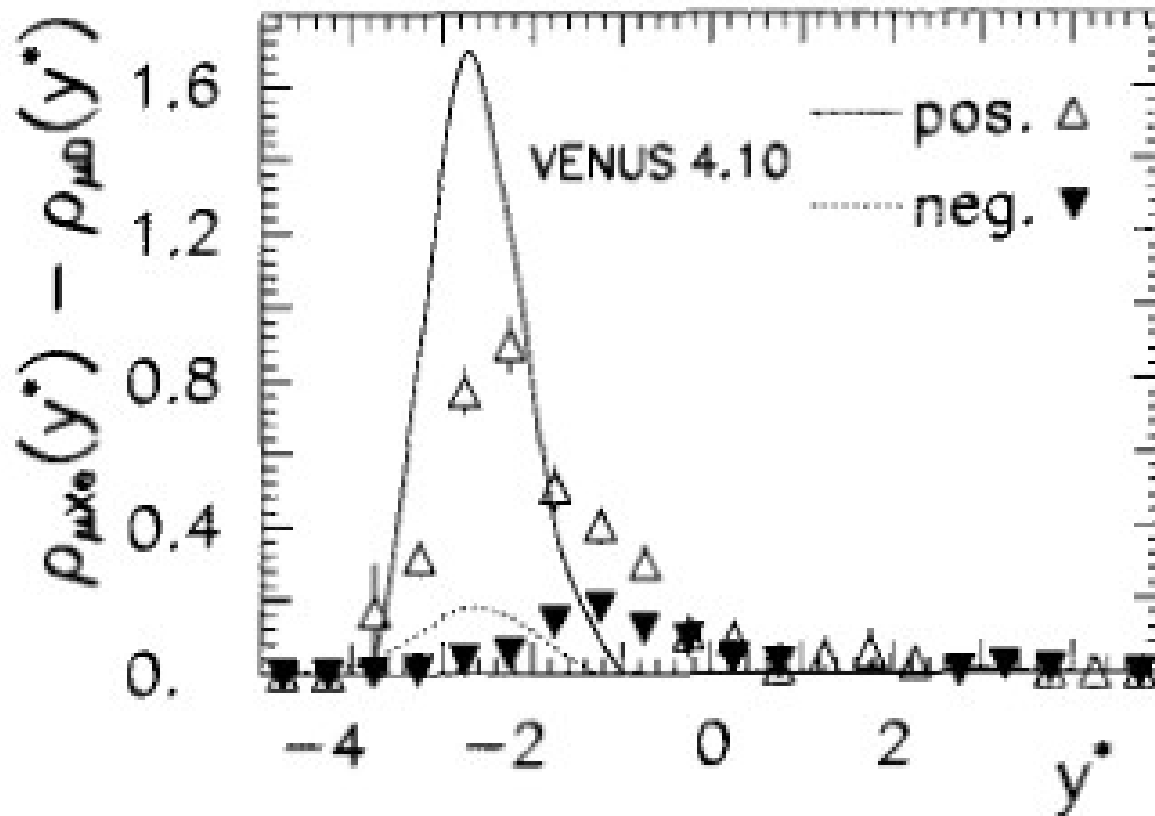


Fig. 25. Normalized cms-rapidity distribution of the hadronic net charge for μ D (full circles) and μ Xe scattering (open circles). The lines represent the predictions of the VENUS model

Another measure of nuclear response

Z. Phys. C 61, 179-198 (1994)



WARNING:
Possible e^+e^- pair
contamination.

Or physics: BeAGLE
does not model the
case of γ^* colliding
Inelastically with 2
or more nucleons.

Plain DPMJET
might. Or turn on in
Pythia...

Fig. 26. Difference of the normalized cms-rapidity distributions between μXe and μD scattering, for positive (open triangles) and negative hadrons (full triangles). The lines represent the predictions of the VENUS model

Evaporation neutrons

Neutrons from Pb

PRL 80 (1998) 2020

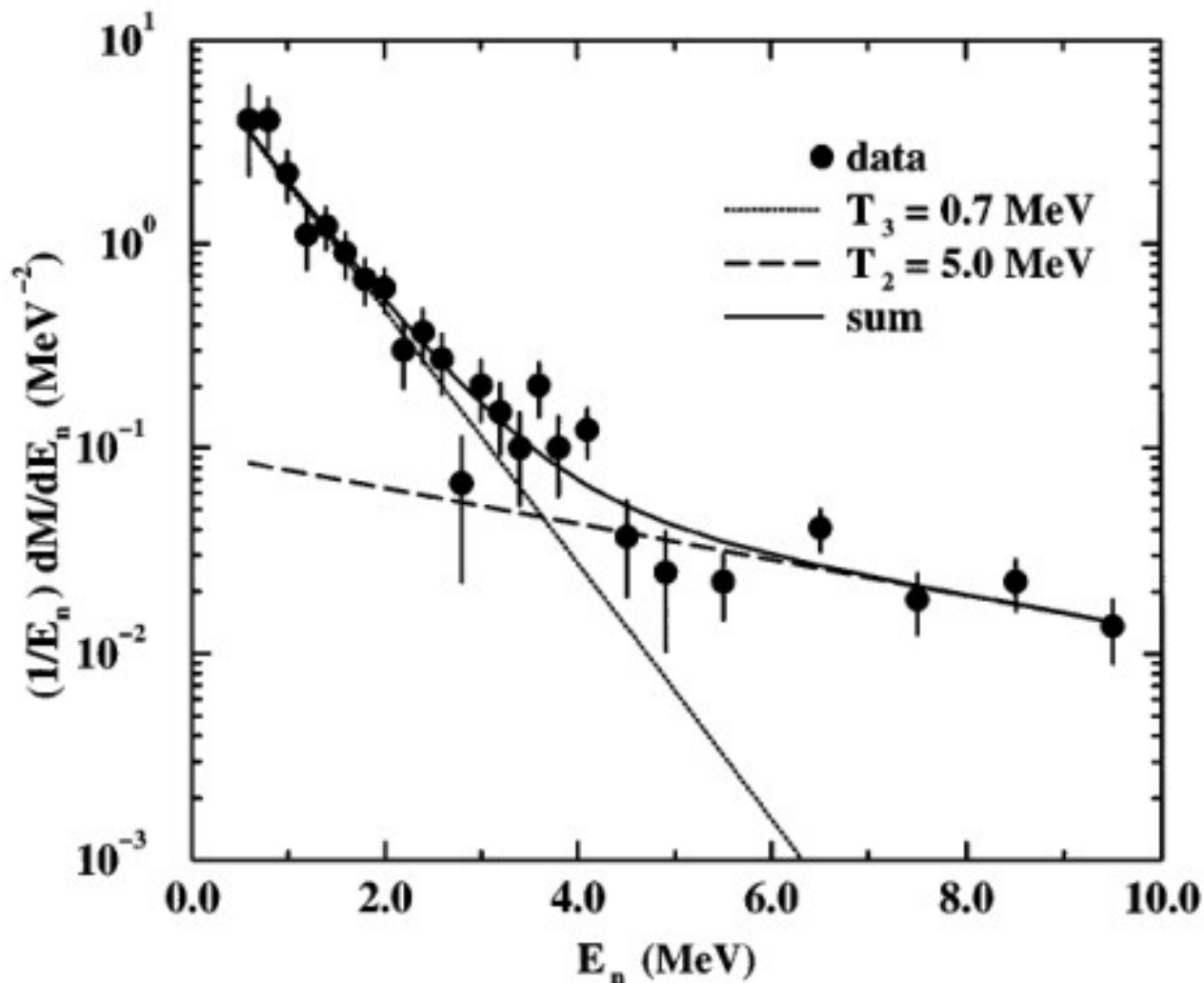


FIG. 1. The differential multiplicity $(1/E_n)dM/dE_n$ as a function of neutron energy E_n for deep-inelastic muon scattering from a Pb target with $\nu < 200$ GeV. The curves show the two-exponential fit to the data as described in the text.

What else can we do?

- Intranuclear cascades and nuclear response are actually well studied in various emulsion experiments.
- Look into DPMJET and VENUS.
- What data validates those models?
 - Is there better data to check BeAGLE against?

BeAGLE Tune

- Matched Elke's Pythia tunes:
 - `~mdbaker/BeAGLE/PythiaControl/S3ALL000` corresponds to Elke's:
`input.data.ep_noradcor.20x250.eic.FF.Mark.NewRCPT.v1`
 - $\text{PARJ}(170)=\text{PARJ}(21)=\text{PARP}(91)=\text{PARP}(99)=0.32$
 - `~mdbaker/BeAGLE/PythiaControl/S3ALL001` corresponds to
`input.data.ep_noradcor.20x250.eic.FF.Mark.NewRCPT`
 - $\text{PARJ}(170)=0.2$ $\text{PARJ}(21)=\text{PARP}(91)=\text{PARP}(99)=0.4$
 - Recall Elke's Pythia change: $\text{PARJ}(170)$ controls remnant cluster breakup, not $\text{PARJ}(21)$ which is now only string fragmentation p_T

Questions

- Are those the right ones or should I use
input.data.ep_noradcor.20x250.eic.FF.HERMES.VMD.Mark.NewRCPT?
- Do these work or is there still an infinite loop?
- Have we checked the non-v1 tune? PARJ(170)
may need tweaking...
- Is there any evidence of a difference between
fixed target and "MOM" mode for pyinit?

Differences between BeAGLE/Pythia tune

- $\text{PARP}(2)=2$ for BeAGLE vs. $D=5$
 - Minimum collision s lowered
- $\text{MSTU}(16)=1$ (D) for BeAGLE vs. 2 for Pythia
 - Some change in event history mother/daughter pointers which I don't really understand.